

MUKHITDINOV, U.

Testing defoliants on cotton plants with different degrees of  
water availability and maturity. Uzb.biol.zhur. no.2:19-23 '60.  
(MIRA 14:5)

1. Institut genetiki i fiziologii rasteniy AN UzSSR.  
(COTTON GROWING) (DEFOLIATION)

BERSONOVA, K.A.; MUKHITDINOV, U.

Testing herbicides on plants infesting drainage systems of the  
Golodnaya Steppe. Uzb. biol. zhur. 7 no.1:72-77'63 (MIRA 17:7)

1. Institut genetiki i fiziologii rasteniy AN Uzbekskoy SSR.

**BERSONOVA, K.A.; MUKHITDINOV, U.**

**Application of herbicides by the injection method for reed and  
cattail control in drains. Uzb. biol. zhur. 8 no. 5:59-62 '64  
(MIRA 18:2)**

**1. Institut genetiki i fiziologii rasteniy AN UzSSR.**

VANYUKOV, M.P.; MURATOV, V.R.; MUKHITDINOVA, I.A.

Time resolved emission spectra from a spark discharge in nitrogen  
and air in the 5000 - 10,000 Å wavelength range. Opt. 1 spektr.10  
no.4:561-563 Ap '61. (MIRA 14:3)  
(Electric discharges through gases)

VANYUKOV, M.P.; MURATOV, V.R.; MUKHITDINOVA, I.A.

Time radiation spectra of spark discharges in inert gases  
in the region between 5,000 and 10,000 Å. Opt. i spektr.  
11 no.3:312-318 S '61. (MIRA 14:9)  
(Electric discharges through gases)  
(Radiation)

MUKHITDINOVA, M. I.  
Acad Sci USSR. Inst of Physiology imeni I. P. Pavlov. Laboratory of Physiology  
and Pathology of Higher Nervous Activity.

MUKHITDINOVA, M. I.- "Investigation of the mobility of nervous processes in the  
syndrome of 'obtrusiveness.'" Acad Sci USSR. Inst of Physiology imeni I. P.  
Pavlov. Laboratory of Physiology and Pathology of Higher Nervous Activity.  
Leningrad, 1956.  
(Dissertation for the Degree of Candidate in Medical Sciences)

SO: Knizhnaya Letopis' No. 20, 1956

L 53727-95 EWT(1)/EWA(h) Feb GW  
ACCESSION NR: AP5017252 UR/0167/64/000/005/0030/0036  
15  
13  
8

AUTHOR: Mukhitdinova, M. I.

TITLE: Effect of earthquakes on Senkov dam

SOURCE: AN UzSSR. Izvestiya. Seriya tekhnicheskikh nauk, no. 4, 1964, 30-36

TOPIC TAGS: seismology

ABSTRACT: The Senkov dam is essentially a system of vertical, bottomless wells, formed by intersecting concrete or reinforced-concrete walls, whose height depends upon the contour of the spillway area. These wells, or cells, are filled with soil or rock, and on top is laid a continuous concrete plate, which guarantees free overflow over the ridge of the dam and through the gates. The enclosed rock or soil gives the dam its necessary weight and assures stability (concrete is sometimes also used as filler). The thickness of the cell walls may be as little as 8 cm; the cells extend down 5 meters.

L 53727-65

ACCESSION NR: AP5017252

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The present article is a purely mathematical study of the effects of earthquakes on a Senkov dam. On the basis of two assumptions concerning the filler (assumed to be, first, an elastic medium, and then an incompressible liquid), two sets of formulas are derived for sag at the two ends and at the middle of a Senkov dam. The formulas require computer treatment for practical use. The article gives no details of the effectiveness of this type of construction on the practical level.

Orig. art. has:: 25 formulas.

ASSOCIATION: Institut mekhaniki AN UzSSR (Institute of Mechanics An UzSSR);  
Vychislitel'nyy tsentr AN UzSSR (Computing Center AN UzSSR)

SUBMITTED: 06Jan64

ENCL: 00

SUB CODE: ES, MA

NR REF SOV: 002

OTHER: 000

JPRS

384  
Card

2/2



MESSINOVA, O.V.; SHAROVSKAYA, V.N.; MUKHITDINOVA, R.G.; YUSUPOVA, D.V.; BENING, G.P.

Deoxyribonuclease activity of *Corynebacterium diphtheriae* PW-8.

Zhur. mikrobiol., epid. i immun. 40 no.11:12-15 N '63.

(MIRA 17:12)

1. Iz Kazanskogo gosudarstvennogo universiteta i Kazanskogo instituta epidemiologii i mikrobiologii.

MUKHITOV, B.

Maximum admissible phenol concentration in atmospheric air. Zdrav.  
Kazakh. 21 no.6:65-68 '61. (MIRA 15:2)

1. Iz kafedry kommunal'noy gigiyeny (zav. - prof. V.A.Ryazanov)  
TSentral'nogo instituta usovershenstvovaniya vrachey.  
(AIR POLLUTION) (PHENOLS)

TIUNOV, K.V.; MUKHIYEV, Yu.D.

Age, thickness, and lithologic composition of the lower part  
of the middle Jurassic argillite formation of the Greater Balkhan.  
Izv. AN Turk. SSR. Ser. fiz.-tekhn., khim. i geol. nauk no.4:  
118-119 '61. (MIRA 14:12)

1. Upravleniye geologii i okhrany nadr pri Sovete Ministrov  
Turkmeniskoy SSR.  
(Balkhan Range—Geology stratigraphic--Jurassic)

MUKHLENOV, I.P.

"Concerning G.I.D. Sirotkin's Article "The Deterioration of the Vanadium Catalyst for the Oxidation of  $\text{SO}_2$  in the Exploitation Process", Zhur. Prik. Khim. No. 6, 1949. Leningrad Tech Inst. -cl949-.

Heavy-L. Frenkel  
18

**Arsenic poisoning of vanadium catalysts in the production of sulfuric acid.** I. G. Lesokhin and I. P. Mukhlenov (Leningrad Technol. Inst.) *Zhur. Priklad. Khim.* (J. Applied Chem.) 23, 440 (1950). The effect of different units of  $As_2O_3$  on the degree of oxidation of  $SO_2$  to  $SO_3$  was detd. in  $SO_2$  + air mixts. contg. known concns. of  $As_2O_3$ , flowing at a space velocity of 185-200 cc (S.T.P.) cc catalyst

hr., at 485 and 500°. At any given  $t$ , the catalyst retains only a fraction, increasing with time, of the  $As_2O_3$  passed, until a satn. amt. is reached. The plot of the rate const.  $k$  of the oxidation as a function of the amt.  $g$  of  $As_2O_3$  retained (in g./l. satd. catalyst) consists of an initial rectilinear portion representable by  $k = k_0 - \alpha g$ , where the poisoning coeff.  $\alpha = 0.2$  (in a mixt. contg. 7%  $SO_2$ , 93% air, at 485°,  $t = 0.5$  mg. l.). On further prolonged poisoning, absorption of  $As_2O_3$  by the catalyst decreases and stops at 11-12%  $As_2O_3$  (of the wt. of the satd. catalyst, or 15% of the wt. of the unsatd. catalyst). Over that range, the rate const. can be represented by  $k = 7.5/g^{0.5}$ , i.e. the decrease of the rate is hyperbolic. The limit of poisoning is represented by  $\alpha = 1/(g \ln(1/\theta_0 - \theta_1))$  where the subscripts  $g$  and  $t$  refer to the initial and final  $g$ , resp. The values at 450, 475, 485, 490, 495°, with respect to the satd. catalyst, are  $\alpha = 0.0251, 0.0189, 0.0183, 0.0182, 0.0179$ , and with respect to the unsatd. catalyst  $\alpha = 0.0292, 0.0220, 0.0215, 0.0211, 0.0204$ . The activation energy  $E$  for the poisoned catalyst, in the temp. range 475-505°, is 20-22 kcal., i.e. close to the figure (18-20 kcal.) for the unpoisoned catalyst. However, below 475°,  $E$  for the poisoned catalyst is increased by a factor of 2, whereas on an unpoisoned catalyst the same increase is observed only at as low as 440°. Catalysts poisoned with small units of  $As_2O_3$  cannot be regenerated by an air blast at 450-575°; only the  $As_2O_3$  retained at higher  $t$  and over longer times can be removed in a hot-air stream. With  $t = 2.0$  mg. l., and 24 hrs., the total amt. of  $As_2O_3$  retained consists of an irreversible and a reversible part. Under production conditions,  $\alpha$  is usually low, and therefore the poisoning is mostly irreversible. More efficient is the removal of  $As_2O_3$  (in the form of  $AsCl_3$ ) by HCl; this operation, however, entails a loss of activity of the catalyst. Some elimination of the  $As_2O_3$  is also achieved by HCl vapor. N. Thon

MUKHLENOV, I. P.

22872

USSR/Chemistry - Catalysts

Aug 52

"The Mechanism of Arsenic Poisoning of a Vanadium Catalyst in the Production of Sulfuric Acid,"  
I. P. Mukhlenov, Leningrad Technol Inst Invent  
Leningrad

"Zhur Prikl Khim" Vol 25, No 8 pp 793-796

States that poisoning action of arsenic trioxide takes following pattern: (1) sorption by the catalyst of arsenic trioxide; (2) oxidation of arsenic trioxide to arsenic pentoxide; (3) reaction of arsenic pentoxide with alkali metal

22872

polyvanadate in soln, during which vanadium pentoxide is displaced:  $ms_2O_5 + Me_2O \cdot nH_2O \rightarrow mV_2O_5 + Me_2O \cdot nH_2O$ . Parallel with the above reaction, but to a lesser deg, this reaction takes place:  $ms_2O_5 + Me_2O \cdot nH_2O \rightarrow mV_2O_5 + 2nH_2O$ . By lessening the amt of solvent for alkali metal polyvanadate, this latter reaction contributes to the poisoning. States that, since all industrial vanadium catalysts contain alkali metals, they are all poisoned by arsenic. Those catalysts which do not contain alkali components cannot be poisoned by arsenic.

22872

POZIN, M.Ye.; ~~\_\_\_\_\_~~ MUKHLENOV, I.P.; VOL'FKOVICH, S.I., akademik.

Foam conditions for the processing of gas-fluid systems. Dokl. AN SSSR 92 no.2:  
393-396 S '53. (MIRA 6:9)

1. Akademiya nauk SSSR (for Vol'fkovich).
2. Leningradskiy tekhnologicheskii institut im. Lensoвета (for Pozin and Mukhlenov).  
(Foam) (Fluid dynamics)

MUKHLENOV, I. P.

Foam formation as a means for gas-liquid reactions. M. B. Pozin, I. P. Mukhlenov, E. S. Tarnarkins, and E. Ya. Tarat (Leningrad Technol. Inst., Leningrad). *Zhur. Priklad. Khim.*, 27, 12-21 (1954).—The advantages of foam formation in mass- and heat-transfer reactions and dust and smoke removal are given analytically and mathematically. A diagrammatic sketch of a perforated plate column with liquid-sealed overflow from each plate is shown. The perforation of the plates can be of any shape and if desired at an angle to the direction of flow. The back pressure of such column approaches that of a packed tower while the reaction rate approaches the efficiency of a bubble tower at the flooding point. The surface of contact is increased many fold while diffusional resistances decreased. It is possible to operate such a column at a gas rate of 0.7-4.0 m./sec. with a wide range of liquid flow. I. Benicovitz



MUKHOMOV, I.P., kandidat tekhnicheskikh nauk; TRABER, D.G., kandidat tekhnicheskikh nauk; RUMYANTSEVA, Ye.S.

Using a suspended layer of the catalyst in the oxidation of sulfur dioxide. Khim.prom. no.8:457-460 D '55. (MLBA 9:5)

1. Leningradskiy tekhnologicheskii institut imeni Lencoveta.  
(Sulfur dioxide) (Catalysts)

AID P - 2258

Subject : USSR/Chemistry

Card 1/1 Pub. 152 - 3/19

Authors : Mukhlenov, I. P., and Ye. S. Tumarkina

Title : Heat transfer in foam apparatus

Periodical: Zhur. prikl. khim., 28, no.2, 135-144, 1955

Abstract : Heat transfer between water and air in foam was studied in various types of foam apparatus. Though there is a brief contact between water and air, the heat efficiency of a column plate reaches 95%. Formulas are given for determination of the heat transfer coefficient. Two tables, 6 diagrams, 11 references (8 Russian: 1940-54).

Institution: Leningrad Technological Institute (im. Lensovet)

Submitted : 0 1, 1953

Subject : USSR/Chemistry AID P - 2773  
Card 1/1 Pub. 152 - 1/19  
Authors : Mukhlenov, I. P. and Ye. S. Tumarkina  
Title : Heat transfer in foam apparatus. Part II.  
Periodical : Zhur. prikl. khim. 28, 4, 345-352, 1955  
Abstract : The heat transfer coefficient increases with the increase in the height of the initial liquid layer. A formula is given for determination of the heat transfer coefficient. Three tables, 10 diagrams, 1 Russian reference: 1954.  
Institution : None  
Submitted : 01, 1953

MUKHLENOV I P

USSR/Chemical Technology - Chemical Products and Their Application. Mineral  
Salts. Oxides. Acids. Bases, I-5

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 62087

Author: Pozin, M. Ye. Mukhlenov, I. P., Vasilesku, L. S.

Institution: None

Title: On Reduction of Ferric Sulfate with Sulfur Dioxide

Original

Periodical: Zh. prikl. khimii, 1955, 28, No 6, 573-578

Abstract: Study of the effects of technological conditions (temperature and concentration of  $\text{SO}_2$  and  $\text{O}_2$  in gaseous mixture) on rate of reaction of reduction of  $\text{Fe}_2(\text{SO}_4)_3$  to  $\text{FeSO}_4$  in the process of production of  $\text{H}_2\text{SO}_4$  by means of a Fe-catalyst from impure waste gases. Gaseous mixture fed at a rate of 30 l/hour through glass filter into reaction vessel containing 150 ml of  $\text{Fe}_2(\text{SO}_4)_3$  solution ( $\text{Fe} \sim 30 \text{ g/l}$ ), contained in a thermostat at  $20-80^\circ$ , with a ratio  $\text{SO}_2:\text{O}_2 = 1:0.4$  (concentration  $\text{SO}_2$  7%). During first period ( $\sim 1.5$  hour) when in solution the amount of  $\text{Fe}^{3+}$  is still large rate of reaction of  $\text{Fe}^{3+}$

Card 1/3

USSR/Chemical Technology - Chemical Products and Their Application. Mineral  
Salts. Oxides. Acids. Bases, I-5

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 62087

Abstract: reduction predominated rate of  $\text{Fe}^{2+}$  oxidation. During second period the reversed conditions took place which was due to accumulation of  $\text{Fe}^{2+}$ , and also decrease in  $\text{SO}_2$  solubility and lowering of dissociation degree of  $\text{Fe}_2(\text{SO}_4)_3$  due to  $\text{H}_2\text{SO}_4$  formation. As  $\text{Fe}^{3+}$  accumulated rate of oxidation decreased. Increase in temperature accelerated accumulation of  $\text{H}_2\text{SO}_4$  but extent of maximum reduction of  $\text{Fe}^{3+}$  decreased with rise in temperature from 20 to 60° (solubility of  $\text{SO}_2$  decreased more rapidly than solubility of  $\text{O}_2$ ). On rise of temperature to 80° extent of reduction of  $\text{Fe}^{3+}$  increased again. Rate of acid formation which increases rapidly at the beginning of first period, and decreases at its end, remained constant during second period up to a considerable accumulation of  $\text{H}_2\text{SO}_4$  after which it dropped again, especially at 60-80°. With increase in  $\text{H}_2\text{SO}_4$  concentration optimal temperature of the process decreases. Experiments with  $\text{SO}_2$  concentrations of 7-100% (at 60°) also showed at first a decrease in  $\text{Fe}^{3+}$  content of the solution with subsequent predominance of oxidation reaction. Only in the absence of  $\text{O}_2$  (100%  $\text{SO}_2$ ) no second period occurred. Increase in  $\text{SO}_2$  concentration from 20 to

Card 2/3

USSR/Chemical Technology - Chemical Products and Their Application. Mineral  
Salts. Oxides. Acids. Bases, I-5

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 62087

Abstract: 100% increased at the beginning of the process the rate of acid formation and apparently decreased the maximum attainable concentration of acid in solution. Maximum concentration was obtained with 20%  $\text{SO}_2$  in gas mixture. In all experiments degree of  $\text{Fe}^{3+}$  reduction was not less than 20%. Change in  $\text{SO}_2:\text{O}_2$  ratio from 1:0.4 to 1:4 at 60° and 7% concentration of  $\text{SO}_2$  has shown that degree of  $\text{Fe}^{3+}$  reduction decreases with increase in  $\text{O}_2$  concentration while rate of sum-mative process of acid formation increases (by 3 times). An  $\text{H}_2\text{SO}_4$  concentration of 20.6% was attained which is not a maximal. The investigation has confirmed the possibility of concurrent utilization of waste gases and waste pickling solutions or the production of  $\text{H}_2\text{SO}_4$  (after crystallization of  $\text{Fe}_2(\text{SO}_4)_3$  from the solution).

Card 3/3

AID P - 3565

Subject : USSR/Chemistry

Card 1/1 Pub. 152 - 2/20

Authors : Pozin, M. Ye., I. P. Mukhlenov, and L. S. Vasilesku

Title : Oxidation of sulfur dioxide in a ferrous sulfate solution

Periodical : Zhur. prikl. khim., 28, 7, 681-686, 1955

Abstract : Sulfur dioxide reacts with a ferrous sulfate solution forming ferric sulfate and sulfuric acid. Optimum temperature for the oxidation of ferrous sulfate to ferric sulfate is 60-80°C, and for the formation of sulfuric acid, 80-90°C. Six diagrams, 7 references, 5 Russian (1931-1955).

Institution : Leningrad Technological Institute im. Lensovet

Submitted : My 10, 1954





AID P - 3739

Subject : USSP/Chemistry

Card 1/1 Pub. 152 - 3/22

Authors : Mukhlenov, I. P. and V. Ya. Demshin

Title : Effect of the properties of wash liquids on removal of dust from gas by the foam method

Periodical : Zhur. prikl. khim., 28, 9, 922-926, 1955

Abstract : The addition of surface-active agents (sodium oleate) to wash water has a favorable effect on the removal of hydrophobic dust particles, but not on the removal of hydrophylic particles. Addition of electrolytes ( $\text{Na}_2\text{CO}_3$ ) practically does not affect the removal of dust from gas. Five diagrams, 5 references, 3 Russian (1947-1955).

Institution : Leningrad Technological Institute im. Lensovet

Submitted : F 21, 1955

Maklifenov, I. P.

PH ✓ Analysis of the processes of dust removal in a foam scrubber. M. E. Pozin, I. P. Mukhlenov, and V. Ya. Demshin (Leningrad Technol. Inst., Leningrad). *Zhur. Priklad. Khim.* 28, 1116-20 (1955); cf. *C.A.*, 50, 3876g. Two alternatives suggest themselves to account for the fact that in foam dust collectors the proportion of dust with larger particle diam.  $\delta$  is larger in the  $H_2O$  passing through the plate (a) than in the  $H_2O$  (foam) passing over the wiper (b). That it is not caused by normal settling during the period of retention in the collector is shown by expts. with pure air bubbling through a  $H_2O$ -dust suspension; the particle distribution in both streams remains the same. The second alternative, that classification occurs under the plate by the inertia effects of the plate, was tested by a careful material balance of the respective streams and the detn. of the size distribution in a and b. The fractional dust removal  $\sigma$  is smaller in a than in b and does not exceed 80% in the finer even with the coarser particles,  $\delta \sim 60 \mu$ . This is accounted by the fact that the free area of the plate is 10.05% so that less than 83.35% of the gas stream is affected by the inertia forces of the plate. This also accounts for the fact that  $\sigma$  of hydrophobic dusts is smaller in a and is affected by the d. and by  $\delta$  of the particles to a greater extent than hydrophilic dusts; for  $\delta < 5 \mu$  there is no difference between the 2 dusts.

I. Hencowitz

(2)

*M. Khlenov I.P.*

The efficiency of multiple-plate foam scrubbers: M. R. Pozin, I. P. Mukhlenov, and V. Ya. Denishin (Leningrad Technol. Inst., Leningrad); *Zhur. Priklad. Khim.* 28, 1231-1234 (1955); cf. *C.A.* 50, 4427g. — The effectiveness of additional plates on the degree of dust removal was detd. in a glass column with a dust ( $\text{SiO}_2$ ) load of 0.98 g./cu. in. The degree of scrubbing by 4 consecutive plates was 96.3, 96.2, 93.2, and 83.1%. The fractional dust removal  $\sigma_i$  of fractions with particle diam. 0-2.5, 2.5-5, 5-7.5, 10-16, 16-20, and 20-30 were: by the first plate 74.0, 84.5, 91.5, 97.1, 98.3, and 99.5%; by the second plate 9.2, 39.0, 45.4, 90.6, 79.6, and 83.0%; the corresponding values of  $\sigma_i$  were smaller for the 3rd and 4th plates. This is ascribed to the different phys. properties (such as gas adsorption) of particles in the same size fraction and to a different turbulent coagulation of each particle as the dust concn. decreases. I. B.

MUKHLENOV, I. P.

MUKHLENOV, I. P.: "Investigation of the foam method of interaction between gases and liquids." Min Higher Education USSR. Leningrad Order of Labor Red Banner Technological Institute Leningrad Soviet. Chair of General Chemical Technology. Leningrad, 1956. (DISSERTATION FOR THE DEGREE OF DOCTOR IN TECHNICAL SCIENCE)

So. : Knizhnaya letopis' No 15, 1956, Moscow

*Mukhlenov, I. P.*  
Removal of dust from industrial gases in a foam gas washer. M. E. Pozin, I. P. Mukhlenov, and E. Ya. Tarat (Leningrad Technol. Inst., Leningrad). *Gigiena i Sanit.* 21, No. 12, 11-18 (1960). 14 refs. A gas-washing device is described which is based on passage of the dust-laden gas through a vessel provided with one or more horizontal baffles. The baffles are arranged so that the gas is forced to pass through a foam layer which forms on the baffles.

*3*

Name: MUKHLENOV, Ivan Petrovich

Dissertation: Study of the foam method of interaction of gases and liquids

Degree: Doc Tech Sci

Affiliation: [not indicated]

Defense Date, Place: 3 Apr 56, Council of Leningrad Order of Labor Red Banner Technological Institute imeni Lensovet

Certification Date: 29 Jun 57

Source: BMVO 18/57

**NUKHLENOV, I.P.; TRAHER, D.G.; RUMYANTSEVA, Ye.S.**

**Reply on the remarks of I.Aroslav Beranek and Ivan Klumper. Khim.  
prom. no.1:43-44 Ja-F '57. (MLRA 10:4)**

- 1. Leningradskiy tekhnologicheskii institut imeni Lenseveta.  
(Fluidisation)**

MURKLENOV, I. P.

27

Removal of sulfuric acid fog. K. K. Kildeshteyn, Y. M. Chalkin, L. P. Murklenov, and E. S. Yuzvitskiy. (Moscow, USSR). Different methods for the removal of H<sub>2</sub>SO<sub>4</sub> fog from a gas stream. A foam scrubber, a Venturi nozzle, packed columns, and a fine mist precipitator were investigated. The gas contained SO<sub>2</sub> 10-15% and steam 200 g/cu. m. The foam scrubber operated at 2-4 m/sec in the column and 15 m/sec through the perforations and a packed mist precipitator. The best results were found most economical. The best results showed 70-90% of the total gases at a back pressure of 150 mm. H<sub>2</sub>O and the best at a back pressure of 150 mm.

dist 4843



MUKHLENOV, I. B.

Character of gas-liquid dispersed systems. M. B. Ponomarev, E. Mukhlesov, and N. Ya. Gerasimov (Leningrad Technol. Univ., Leningrad). Zhur. Priklad. Khim., 30, no. 10, 1977.

The conditions in a sieve-plate app. are determined primarily by the flow rate of the gas stream, and the bubbling process passes into a foaming process. Photographic examn. shows that the structure of the foam changes. The processes of heat- and mass-transfer proceed more vigorously in the layer of dynamically stabilized foam consisting of films and liquid mixed with gas bubbles. The criteria suggested by Melikyan (preceding abstr.) are unsuitable for sieve plates and the concept of 3 streams is not always accurate. I. B.

МУХЛЕВ, И. П.

POZIN, M.Ye.; MUKHLENOV, I.P.; TARAT, E.Ya.

Foam technique for dust collection from gases. Zhur.prikl.khim.  
30 no. 2:293-297 F '57. (MLRA 10:5)

1. Leningradskiy tekhnologicheskii institut imeni Lensoveta.  
(Dust collectors) (Gases)

MUKHLENOV, I.P.  
MUKHLENOV, I.P.

Dynamics of a suspended layer of a liquid in a gas. Zhur.prikl.  
khim. 30 no.12:1750-1755 D '57. (MIRA 11:1)

1. Leningradskiy tekhnologicheskii institut im. Lensovet.  
(Hydrodynamics) (Gases)

5(1)

PHASE I BOOK EXPLOITATION

SOV/2099

Mukhlenov, Ivan Petrovich, Professor

Tekhnologiya vazhneyshikh otrasley promyshlennosti, chast' III:  
Khimicheskaya promyshlennost' (Technology of the Major Branches  
of Industry, Pt. 3: Chemical Industry) Moscow, Izd-vo VPSH i  
AON pri TsK KPSS, 1958. 177 p. 25,000 copies printed.

Sponsoring Agency: Kommunisticheskaya partiya Sovetskogo Soyuza.  
Tsentral'nyy Komitet. Vysshaya partiynaya shkola.

General Ed.: G.I. Pogodin-Alekseyev, Professor (Higher Party  
School); Eds: G.F. Sofronov, Chief (Leningrad Higher Party  
School, Division of Manufacturing), and Z.I. Griva; Tech. Ed.:  
T.A. Fomkina.

PURPOSE: The book is intended as a textbook for students of party  
schools specializing in the technology of chemical industries.

Card 1/5

**Technology of the Major Branches (Cont.)**

SOV/2099

**COVERAGE:** A brief description is given of chemical industries of major importance to the national economy. The fundamental principles of general, organic, and physical chemistry are given as well as a general description of the basic equipment used in chemical industries. The book is based on the teaching experience of the Department of Industrial Production of the Leningrad Higher Party School. Contributions to this book were also made by the workers of Dnepropetrovsk, Gor'kiy and Kazan' Higher Party Schools. The book is the first attempt to compile a textbook on chemical technology for students of higher party schools. No personalities are mentioned. There are nine references, all Soviet.

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Technology of the Major Branches (Cont.)

SOV/2099

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Technology of the Major Branches (Cont.)

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AVAILABLE: Library of Congress

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TM/bg  
8-18-59



MUKHLENOV, I. P.

22.11.45

Investigation of mobile foam on sieve plates. I. P. Mukhlenov (Technol. Inst., Leningrad). Zhur. Prikl. Khim. 31, 45-54 (1958); Cf. C.A. 49, 12882c, 51, 10985h. — The characteristics of absorption by a mobile foam on sieve plates were studied. These addnl. data and the previous data (see 44.1) were correlated with the theoretical equation previously developed (C.A. 52, 7737a). The height of the foam  $H$  is independent of the geometric parameters of the app. and is practically independent of the gas velocities within the plate perforations. It decreases as the surface tension  $\sigma$  and the kinematic viscosity  $\nu$  of the liquid phase increase. Empirically,  $H = \alpha w_0(h_0 + \beta) + \gamma \nu$ . The values of  $\alpha$ ,  $\beta$ , and  $\gamma$  for initial liquid heights  $h_0$  between 8 and 60 mm. are 0.36, 0.075, and 2, and for  $h_0$  between 60 and 100 mm. 0.1, 0.42, and 2, resp., at gas velocities in the column  $w_0 > 1.0$  m./sec. On the basis of these expl. data the theoretical equation is reduced to  $H/h_0 = A_1 Re^{-1.1} We^{-1.1} (\nu_0/\nu)^{0.2} (D/h_0)^0$ , where  $A_1 = 2.83 \times 10^{-4} \nu_0^{0.2} \nu_0^{-1.1}$ ,  $Re = (w_0 D/\nu_0)$ ,  $We = \sigma/\gamma h_0$ ,  $D$  is the equiv. diam. of the app., and  $\gamma$  is the d. I. Bengowitz

1/1

MUKHOMOV, I.P.

Heat exchange and mass transfer kinetics in foam layer. Zhur. prikl.  
khim. 31 no.9:1342-1348 S '58. (MIRA 11:10)

1. Leningradskiy tekhnologicheskii institut imeni Lensoвета.  
(Heat--Transmission) (Mass transfer) (Foam)

MUKHLENOV, I.P.; TUMARKINA, Ye.S.

Kinetics of heat and mass transfer in a foam layer. Zhur.prikl.khim.  
31 no.11:1647-1655 N '58. (MIRA 12:2)

1. Leningradskiy tekhnologicheskii institut imeni Lensovet.  
(Foam) (Heat--Transmission) (Mass transfer)

POZIN, M.Ye.; ~~MUKHOMOV, I.P.~~; TARAT, B.Ya.; FOMKINA, T.A., tekhn.red.

[Froth apparatus for gas purification, heat exchange, and  
absorption; operation and calculation for froth apparatus]  
Penny gazoочистiteli, teploobmenniki i absorbery; rabota i  
raschet pennykh apparatov. Leningrad. Gos.nauchno-tekhn.  
izd-vo khim.lit-ry. 1959. 122 p. (MIRA 12:12)  
(Gas purification) (Chemical engineering)

14(1)

AUTHORS:

SOV/67-59-3-5/27  
Pozin, M. Ye., Doctor of Technical Sciences, Professor,  
Mukhlenov, I. P., Doctor of Technical Sciences, Tarat, E. Ya.,  
Candidate of Technical Sciences

TITLE:

On the Height of the Initial Liquid Layer on the Bottom of a  
Sifting Apparatus (O vysote iskhodnogo sloya zhidkosti na  
tarelke sitchatogo apparata)

PERIODICAL: Kisl'rod, 1959, Nr 3, pp 26 - 31 (USSR)

ABSTRACT:

The height of the initial layer is one of the most important  
parameters determining the operation of the bottom of a  
sifting apparatus. The rate of heat- and of mass exchange  
depends on the height  $H$  of the mixture of gas and liquid  
which forms at the bottom of the sifter (Refs 1,2).  $H$  is  
proportional to the  $h_0$  of the initial height. In this connect-  
ion most of the authors do not consider the superelevation  
of the layer  $h_0$  over the discharge threshold which forms due to  
the intensive stream of liquid. In the papers by the authors  
(Ref 1) it was shown that also without threshold a considerable  
height  $H$  forms due to the stream. Other authors (Aksel'rod,

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On the Height of the Initial Liquid Layer on the Bottom SOV/67-59-3-5/27  
of a Sifting Apparatus

Usyukin, and Dil'man, Refs 8,9) assumed only low velocities of the liquid and a constant specific weight of the gas-liquid mixture. This changed, however, from 0.1 to almost 1. In this paper a method of determining  $h_0$  - for apparatus with a discharge device in which  $h_0$  depends on the height of the threshold  $h_g$  - , on the liquid stream  $i$  and on the diameter of the discharge opening, is described. The most simple case is a free discharge without discharge threshold ( $h_0$  depends only on  $i$ ) a scheme with external discharge is shown on figure 1, a, with threshold and external discharge figure 1, b. 3rd case with consideration of the diameter of the discharge opening figure 1v ( $H > a_0 + h_g$ ). In the present investigations two models with a rectangular cross section and with a sifter of the dimensions 500 to 80 and 200 to 60 mm and a variation of the threshold from 0 to 40 mm, and a variation of the discharge opening from 40-120 mm was used. The sifters had circular or slotted openings. The intensity of the liquid stream was varied from 1-75 m<sup>3</sup>/m hour. The experiments were made

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On the Height of the Initial Liquid Layer on the Bottom SOV/67-59-3-5/27  
of a Sifting Apparatus

with air-water of 18-20° and with increasing temperature also with salt and acid solutions. Moreover, also the formulas for the determination of  $h_0$  (equations 1-13) are developed. The figures show the individual dependences in the variation of different parameters.  $h_0$  may be computed on general practical conditions according to formula

$h_0 = \psi h_s + 3\sqrt[3]{12}$ , mm (8).  $\psi$  and  $\lambda$  may be determined from a comparison of the data of the two types of apparatus. A more general computation of  $h_0$  is then carried out which may be used for all gas-liquid systems in using different apparatus with a foam formation method (Equations 9-13). From this the equation for  $h_0$  was found:

$h_0^{0.6} = 1.24 H/w^{0.5}$ , m (13) where  $w$  denotes the velocity of gas. There are 7 figures and 12 references, 11 of which are Soviet.

Card 3/3

MUKHLENOV, I.P.

Interaction of phases and classification of two-phase dispersed  
systems used in the chemical industry. Trudy LTI no.54:5-13  
'59. (MIRA 13:8)  
(Systems (Chemistry))



22220

S/124/61/000/003/010/028  
A005/A105

11.9400

AUTHORS:

Mukhlenov, I. P.; Traber, D. G., and Sarkits, V. B.

TITLE:

The influence of hydrodynamical factors on the heat emission process from a suspended layer into a heat exchange surface

PERIODICAL:

Referativnyy zhurnal, Mekhanika, no. 3, 1961, 62-63, abstract 3B427  
(Tr. Leningr. tekhnol. in-ta im. Lensovet, 1959, no. 54, 24-36)

TEXT:

The authors measured the heat emission from a heated boiling layer into a spiral tube submerged into the latter, which cooling water flows through. The diameter of the reactor was 49 mm, the diameter of the spiral tube coil was 20 mm. There were measured: the temperatures of the water at entrance (10-24°C) and outlet (17-57°C), and the temperatures of the layer at the levels of the lower and upper cooler boundary (130-150°C). The temperature head was calculated as logarithmic mean for counterflow. A sloping maximum of the heat emission coefficient  $\alpha_{\max}$  was observed for expansion of the layer by 1.5-1.6 times. The value  $\alpha_{\max}$  decreased from 270 to 193 kcal  $m^2 h^{-1} ^\circ C$  with mean diameter of the grains increasing from 0.38 to 2.5 mm; and for  $d = 3.5$  mm this value increased up to 200 kcal  $m^2 h^{-1} ^\circ C$ . The absolute value of the flow velocity, most favorable for

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S/124/61/000/003/010/028  
A005/A105

The influence of hydrodynamical ...

heat emission, increased by ten times, and its ratio to the critical velocity of the start of liquefaction decreased from 8.8 to 3.8. The value  $\alpha_{\max}$  increased proportional to  $H_0^{0.45}$  with increasing initial height of the layer. The coefficient of heat emission decreased when lifting the cooler into the upper part of the boiling layer, which points out the thermal inhomogeneity of the boiling layer.

O. Todes

[Abstractor's note: Complete translation]

Card 2/2

ANOKHIN, V.N.; TRABER, D.G.; MUKHLENOV, I.P.; RUMYANTSEVA, Ye.S.

Conversion of carbon monoxide in a suspended catalyst bed. Trudy  
LTI no.54:37-46 '59. (MIRA 13:8)  
(Carbon monoxide) (Catalysis)

TRABER, D.G.; RUMYANTSEVA, Ye.S.; MUKHLENOV, I.P.

Effect of the particle size of a manganium catalyst in a suspended  
bed on its activity during the oxidation of sulfur dioxide. Trudy  
LTI no.54:47-52 '59. (MIRA 13:8)  
(Sulfur dioxide) (Oxidation) (Catalysis)

TRABER, D.G.; MUKHLENOV, I.P.; RUMYANTSEVA, Ye.S.

Kinetics of oxidation of sulfur dioxide in a suspended catalyst  
bed. Trudy LTI no.54:53-62 '59. (MIRA 13:8)  
(Sulfur dioxide) (Oxidation) (Catalysis)

МУХЛЕНОВ, И.П.; РОЗОВА, Т.Н.; ЛАЗАРЕВ, Л.С.

Removing dust from gases in froth-type gas washers. Trudy LTI  
no. 54:94-102 '59. (MIRA 13:8  
(Gases--Cleaning) (Dust collectors) (Metallurgy)

MUKHLENOV, I.P.; TUMARTINA, Ye.S.; KIL'SHTEDT, K.K.; KHALEPA, V.M.;  
NIKITINA, L.F.

Removing the sulfuric acid fog. Trudy LFI no.54:103-116 '59.  
(Sulfuric acid) (MIRA 13:8)  
(Gases—Purification)

MUKHLENOV, I.P.; TUMARKINA, Ye.S.

Effect of the surface tension on the hydrodynamics of a fluidized  
liquid bed (bubble bed). Trudy LTI no.54:117-124 '59.

(Fluidization)

(MIRA 13:8)  
(Surface tension)



MUKHLENOV, I.P.; AVERBUKH, A.Ya.; TUMARKINA, Ye.S.

Use of the frothing method of interaction between liquid and gas  
in organic technology. Trudy LTI no.54:125-128 '59.

(MIRA 13:8)

(Gases—Purification)

(Chemical engineering—Equipment and supplies)

(Chemistry, Organic)

5.4700, 5.1190

75666

SOV/80-32-10-15/51

AUTHORS: Sarkits, V. B., Traber, D. G., Mukhlenov, I. P.

TITLE: Heat Transfer From Fluidized Catalyst Layer to the Heat Exchange Surface. Communication 2

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol 32, Nr 10, pp 2218-2225 (USSR)

ABSTRACT: The study deals with the relation between Nusselt criterion, and the Reynolds and Froude criteria; with the effect of the geometric parameters of the apparatus; and with the effect of the initial height of the layer in heat transfer from a fluidized catalyst layer to the heat exchange surface:

$$Nu = \varphi(Re, Fr, \frac{D}{d}, \frac{H_0}{d})$$

where D is the diameter of the heat exchange apparatus; d is the size of the catalyst particles;  $H_0$  is the initial height of the catalyst layer. The experiments were made with BAV-type catalyst of  $d = 0.127$  to  $3.5$

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Heat Transfer From Fluidized Catalyst  
Layer to the Heat Exchange Surface.  
Communication 2

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SOV/80-32-10-15/51

mm. The apparatus and the experimental procedure have been previously described by the authors (this journal, 1959, Vol 32, Nr 6, p 1291; Tr. LIT, 1959, p 54). Values of the coefficient of heat transfer were plotted against the velocity of the air flow for various sizes of the catalyst particles, and the curves were expressed by Eq.(1)-(4). Eq. (1) and (3) described the part of the curve from the critical value of air velocity to the optimum value; Eq. (2) and (4) described the curve portion from the optimum value of air velocity to the velocity at which the catalyst particles were carried away from the apparatus. The equations for the laminar flow are:

$$Nu = 0.065 \cdot Re^{0.85} \cdot Pr^{0.27} \cdot \left(\frac{D}{d}\right)^{0.18} \cdot \left(\frac{H_0}{d}\right)^{0.45} \quad (1)$$

$$Nu = 0.15 \cdot Re^{0.84} \cdot Pr^{0.40} \cdot \left(\frac{D}{d}\right)^{0.18} \cdot \left(\frac{H_0}{d}\right)^{0.45} \quad (2)$$

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Heat Transfer From Fluidized Catalyst  
Layer to the Heat Exchange Surface.  
Communication 2

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SOV/80-32-10-15/51

Those for the turbulent flow are:

$$Nu = 0.14 \cdot Re^{0.45} \cdot Fr^{0.17} \cdot \left(\frac{D}{d}\right)^{0.13} \cdot \left(\frac{H_0}{d}\right)^{0.16}, \quad (3)$$

$$Nu = 0.56 \cdot Re^{1.0} \cdot Fr^{0.56} \cdot \left(\frac{D}{d}\right)^{0.13} \cdot \left(\frac{H_0}{d}\right)^{0.16}, \quad (4)$$

where

$$Nu = \frac{\alpha \cdot d}{\lambda_r}; \quad Re = \frac{w \cdot d}{\nu}; \quad Fr = \frac{g \cdot d}{w^2};$$

Here,  $\alpha$  is the coefficient of heat transfer;  $d$  is the size of the catalyst particles;  $w$  is the linear velocity of the gas in the free cross section of the apparatus;  $\lambda_r$  is the thermal conductivity of the gas;  $\nu$  is the kinematic viscosity of the gas;  $g$  is the free fall acceleration;  $D$  is the diameter of the apparatus; and  $H_0$  is the initial height of the catalyst layer. The values of the numerical coefficients and exponents in Eq. (1)-(4) were determined from the

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Heat Transfer From Fluidized Catalyst  
Layer to the Heat Exchange Surface.  
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various diagrams expressing the effect of the initial height of the catalyst layer and of the apparatus diameter on the heat transfer process, the effect of

$Re = \frac{w \cdot d}{\nu}$  on the heat exchange process, and the effect

Fr on the heat exchange process. The last diagram also gave numerical values of Fr which made possible the determination of the optima velocities of the air for the investigated catalyst in laminar and turbulent flow; the respective equations are (5) and (6):

$$w_{opt} = \sqrt{\frac{g \cdot d}{0.0415}} = 15.35 \cdot \sqrt{d}, \quad (5)$$

$$w_{opt} = \sqrt{\frac{g \cdot d}{0.00374}} = 51.2 \cdot \sqrt{d}. \quad (6)$$

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Heat Transfer From Fluidized Catalyst  
Layer to the Heat Exchange Surface.  
Communication 2

75666  
SOV/80-32-10-15/51

There are 7 figures; and 10 references, 4 U.S., 6 Soviet. The U.S. references are: Dow, W. M., Jacob, M., Ch. Eng. Progr., 47, 12 (1951); Heerden, C., Nobel, A. P., Krevelen, D. W., Ind. Eng. Ch., 45, 6 (1953); Ju-Chin Chu, Fluidization, New York, 1956; Leva, M., et al., Ch. Eng. Progr., 45, 9 (1949); 48, 6 (1952).

ASSOCIATION: Leningrad Institute of Technology imeni Lensovet (Leningradskiy Tekhnologicheskii institut imeni Lensovet)

SUBMITTED: April 14, 1959

Card 5/5

ANOKHIN, V.N.; TRABER, D.G.; MUKHLENOV, I.P.

Conversion of carbon monoxide in the fluidized bed of a catalyst..  
Zhur. prikl. khim. 33 no.8:1740-1745 Ag '60. (MIRA 13:9)  
(Carbon monoxide)

MUKHELENOV, I.P.; TRABER, D.G.; SARKITS, V.B.

Heat transfer from the fluidised bed of granular materials to the  
surface of heat exchange. Zhur.prikl.khim. 33 no.10:2206-2212 0  
'60. (MIRA 14:5)

1. Leningradskiy tekhnologicheskii institut imeni Lenooveta.  
(Heat-Transmission) (Granular materials)



MUKHLENOV, I.P.; TRABER, D.G.; MIKHALEV, M.F.; SHMEKKER, Ya.M.

Oxidation of sulfur dioxide in an apparatus with a fluidised catalyst  
bed. Khim.prom. no.1:42-46 Ja '61. (MIRA 14:1)

1. Leningradskiy tekhnologicheskii institut imeni Lenooveta i savod  
"Krasnyy Khimik."

(Sulfur dioxide) (Fluidization)  
(Oxidation)

MIKHLENOV, I.P.; TRABER, D.G.; SARKITS, V.B.; RUMYANTSEVA, Ye.S.;  
MIKHALEV, M.F.; SHMEKKER, Ya.M.; CHERNYAK, M.A.

Testing an apparatus for the oxidation of concentrated sulfur  
dioxide in a fluidized catalyst bed. Khim.prom. no.11:770-775  
N '61. (MIRA 15:1)

1. Leningradskiy tekhnologicheskiy institut im. Lensoveta, i  
Leningradskiy zavod "Krasnyy khimik".  
(Chemical apparatus) (Sulfur dioxide)  
(Catalysis)

5 140

1205

24000  
S/080/61/034/006/001/020  
D247/D305

AUTHORS: Mukhlenov, I.P., Traber, D.G., Rumyantseva, Ye.S.,  
and Pomerantsev, V.M.

TITLE: Hydrodynamics of a fluidized catalyst bed under high  
pressure

PERIODICAL: Zhurnal prikladnoy khimii, v. 34, no. 6, 1961,  
1181 - 1185

TEXT: With a continuous expansion of the chemical industry and in-  
creased demands for natural and synthetic gases, it has been found  
necessary to study more closely conversions and syntheses, based  
on monoxide, carried out in a fluidized bed, and to confirm the  
existing hydrodynamic equations for processes conducted under  
pressures exceeding 70 atm. in order to obtain data for more effi-  
cient construction of plants. The investigations were carried out  
with a gas mixture normally used in methanol synthesis under  
pressures of 1 - 230 atm. temperature 15-20°C using spherical gra-

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S/080/61/034/006/001/020  
D247/D305

Hydrodynamics of a ...

rules of catalyst of variable particle size, 0.75 - 4.5 mm. The experiments considered of measuring, under different conditions, the hydraulic resistance of the fluidized bed,  $\Delta p$ , determining critical velocity of gas corresponding to the transition of the solid from stationary to fluidized state, apparent gas velocity  $W_{fv}$  being calculated instead of real  $W_f$ , and determining the specific height of the fluidized bed  $H_{sp}$  in terms of a ratio of heights of bed in fluidized,  $H$ , and stationary,  $H_0$ , states. Under high pressures  $\Delta p$  has been found to exceed, in all cases, the ratio of the weight of the contact mass to the cross sectional area of the apparatus by 20 - 35 % and the final equation for  $\Delta p$  has been established as follows:

$$\Delta p = c H_0 (\gamma_T - \gamma_f) (1 - \epsilon_0)$$

( $\gamma_T = \gamma_S$  and  $\gamma_f = \gamma_G$ ) where  $\gamma_S$  and  $\gamma_G$  - density of solid and gaseous phases;  $\epsilon$  and  $\epsilon_0$  - porosity of fluidized and stationary beds;

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24000

S/080/61/034/006/OC\_/020  
D247/D305

Hydrodynamics of a ...

and  $\alpha$  - the coefficient of resistance of the fluidized bed. For pressures of 50 - 230 atm the coefficient  $\alpha$  showed a slight increase corresponding to 1.2 - 1.35 depending upon the particle size of the solid. The critical velocity of gas has been found to decrease with the increasing pressure, the effect being more pronounced for larger particles ( $d = 3.5$  mm). The experimental results were worked out according to A.I. Rychkov, and N.A. Shakhova (Ref. 5: I.F.Zh. II, 9, 92, 1957) and who used equations (Ref. 6: O.M. Todes, and A.K. Bondareva. Khim. nauka i prom. II, 2, 223, 1957) [Abstractor's note: Equations not given] and for lower pressures showed good agreement with the latter. For higher pressures 50 - 230 atm, Pomerantsev submitted the following equation

$$Re_e = 1.3 Ar_e^{0.5},$$

where  $Re_e$  Reynolds number and

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Hydrodynamics of a ...

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S:080/61/034/106/001/020  
D247/D305

$$Re_g = \frac{w \cdot B \cdot d_e}{\nu}$$

$$Ar_g = (1 - \epsilon_0) \frac{\bar{g} d_e^2}{\nu^2} \frac{\gamma_g - \gamma_E}{\gamma_g}$$

- Archimedes number and  $d_e$  - equivalent channel diameter (m) determined by Ryzhik's method,  $\nu$  - kinetic viscosity coefficient ( $m^2/sec$ ),  $g$  - acceleration due to gravity. This equation is represented graphically. The experiments also established that intensive working of the contact mass is achieved for gas velocities corresponding to  $Re_{sp} = 1.6 - 2.0$  as under such conditions the solid mass is subjected to high turbulence while still maintaining a sufficiently high concentration of catalyst in the working space. There are 5 figures, 1 table and 6 Soviet-bloc references.

SUBMITTED: November 29, 1960

Card 4/4

S/080/62/035/001/003/013  
D245/D304

AUTHORS: Anokhin, V. N., Mukhlenov, I. P., Traber, D. G., Chek-  
nov, O. S., Shekun, B. N., and Khiterer, R. Z.

TITLE: Study of the ammonia synthesis in a suspended catalyst  
layer

PERIODICAL: Zhurnal prikladnoy khimii, v. 35, no. 1, 1962, 37-42

TEXT: The authors studied  $\text{NH}_3$  synthesis using a suspended layer  
of activated Fe catalyst (type  $\Gamma\text{K}-1$  (GK-1)) with an average par-  
ticle diameter of 0.18 mm. The temperature dependence of the reac-  
tion rate was found to conform to the Arrhenius equation and the  
activation energy of the catalyst was calculated to be 41,000 kcal/  
kg-mole., which is in agreement with results obtained by other wor-  
kers. At pressures of 100, 200 and 300 atm., and over the tempera-  
ture range studied (400 - 560°C) the reaction rate depended consi-  
derably on the grain size of the catalyst. The linear rate of gas  
flow also affected the degree of uniformity of mixing the gaseous  
and fluidized catalyst phases and, accordingly, the reaction rates.

Card 1/2

MUKHLENOV, I.P.; ROZOVA, T.N.; MIKHALEV, M.F.

Burning of molten sulfur in a fluid bed. Zhur.prikl.khim.  
35 no.7:1511-1516 J1 '62. (MIRA 15:8)

1. Leningradskiy tekhnologicheskii institut imeni Lensoвета.  
(Sulfur) (Combustion)



SARKITS, V.B.; TRABER, D.G.; MUKHLENOV, I.P.

Mixing of gas and the character of motion of the solid phase in  
the suspended layer. Zhur.prikl.khim. 35 no.10:2213-2219 0  
'62. (MIRA 15:12)

1. Leningradskiy tekhnologicheskii institut imeni Lensoveta.  
(Fluidization)

TRABER, D.G.; POMERANTSEV, V.M.; MUKHLENOV, I.P.; SARKITS, V.B.

Heat transfer from a fluid-bed catalyst to the surface of heat exchange. Zhur.prikl.khim. 35 no.11:2386-2393 N '62. (MIRA 15:12)

1. Leningradskiy tekhnologicheskii institut imeni Lensovet.  
(Heat exchangers) (Fluidization) (Heat—Transmission)

MIKHLENOV, I.P.; SARKITS, V.B. [deceased]; OSIPOVA, Ye.N.

Use of contact apparatus with a fluidized bed of the catalyst in  
the production of sulfuric acid. Khim.prom. no.11:833-836 '63.  
(MIRA 17:4)

MUKHLENOV, I.P.; AVERBUKH, A.Ya.; SARKITS, V.B. [deceased]; VITVITSKIY, A.I.

Wear resistant catalyst for the conversion of methanol to  
formaldehyde in a fluidized bed. Khim.prom. no.11:847-849 '63.  
(MIRA 17:4)

MUKHLENOV, I.P.; IVANOVA, R.S.; SOROKO, V.Ye.

Effect of water vapors and iron compounds on the activity of a  
vanadium catalyst in a fluidized bed. Zhur. prikl. khim. 36  
no.4:730-736 Ap '63. (MIRA 16:7)

1. Leningradskiy tekhnologicheskii institut imeni Lenseveta.  
(Vanadium catalysts) (Water vapor)  
(Iron compounds)

IVANOVA, R.S.; MUKHLENOV, I.P.

Poisoning of a vanadium catalyst in a fluidized bed by arsenic trioxide. Zhur. prikl. khim. 36 no.4:737-742 Ap '63.

(MIRA 16:7)

1. Leningradskiy tekhnologicheskii institut imeni Lensoveta.  
(Vanadium catalysts) (Arsenic oxides)

POMERANTSEV, V.M.; MUKHLENOV, I.P.; TRABER, D.G.

Synthesis of methanol in a fluidized bed of catalyst. Zhur.  
prikl. khim. 36 no.4:754-764 Ap '63. (MIRA 16:7)

1. Leningradskiy tekhnologicheskii institut imeni Lenseveta.  
(Methanol) (Fluidization)

AVERBUKH, A.Ya.; VITVITSKIY, A.I.; MUKHLENOV, I.P.; GUZENKOV, V.K.

Fluidized bed in formalin production. Izv.vys.ucheb.zav.; khim.  
i khim.tekh. 7 no.2:301-306 '64. (MIRA 18:4)

1. Leningradskiy tekhnologicheskoy institut im. Lensovet  
i zavod "Metil". Kafedra obshchey khimicheskoy tekhnologii.



L 52551-65 EWT(m)/EFP(c)/EPR/ENP(j)/T Pc-4/Pr-4/Ps-4 RPL WW/RM

UR/0366/65/001/004/0799/0802

ACCESSION NR: AP5011195

AUTHORS: Vitvitskiy, A. I.; Mukhlenov, I. P.; Averbukh, A. Ya.

TITLE: The conversion of methanol through the intermediate product hydrogen peroxide

SOURCE: Zhurnal organicheskoy khimii, v. 1, no. 4, 1965, 799-802

TOPIC TAGS: hydrogen peroxide, conversion reaction, methanol, catalyst, formaldehyde

ABSTRACT: The literature appears contradictory in regard to dehydration and oxidation of formaldehyde and methanol, indicating that both may take place with the same catalyst, without explaining the mechanism. The authors suggest that hydrogen peroxide as an intermediate product explains the conversion process. Oxygen is adsorbed on silver. Methanol and formaldehyde, in reacting with this adsorbed oxygen, form hydrogen peroxide and formaldehyde (from methanol) or hydrogen peroxide and CO (from formaldehyde). This adsorbed hydrogen peroxide may react with CO, formaldehyde, or methanol to form water and, respectively, CO<sub>2</sub>, CO, or formaldehyde. With increase in temperature, the atoms on the surface of the silver regroup and form free hydrogen peroxide molecules, which then desorb.

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The occurrence of this process may explain the phenomenon of a negative temperature coefficient, observed during oxidation of hydrocarbons. It may also explain the order of reaction during homogeneous decomposition of hydrogen peroxide. The desorption probably takes place at about 630-650K. The desorbed hydrogen peroxide then permits a number of homogeneous conversions. Since hydrogen peroxide is a polar molecule, oriented by the negative pole against the surface of the silver, it is natural that application of a negative potential to the silver will facilitate the desorption process and will lead to a higher degree of conversion. It follows, also, that the reaction below about 650K is heterogeneous, whereas it is heterogeneous-homogeneous at higher temperatures. It is concluded that the dehydration and oxidation of methanol and formaldehyde are but two sides of a single process, effected through the intermediate product hydrogen peroxide. Orig. art. has: 10 formulas.

ASSOCIATION: Leningradskiy tekhnologicheskij institut imeni Lenzoveta (Leningrad Technological Institute)

SUBMITTED: 29Feb64

NO REF SOV: 026

2/2

ENCL: 00

OTHER: 015

SUB CODE: IC, GC

MUKHLENOV, I.P.; TABER, D.G.; DOBKINA, Ye.I.

Mechanically resistant iron catalyst for the oxidation of  
sulfur dioxide. Khim. prom. no. 4:241-243 Ap '64. (MIRA 17:7)

CHERNYAK, M.A.; MEGVINOV, A.A.; MIKHLENOV, I.F.; DOBKINA, Ye.I.;  
DEPYIZIKINA, V.I.

Ignition temperature of a wear-resistant vanadium catalyst for  
the oxidation of sulfur dioxide. Khim. prom. 41 no.2:35-36 F '65.  
(MIRA 1814)

MUKHLENOV, I.P.; TRABER, D.G.; ANOKHIN, V.N.; SAVILOV, D.M.; SHEKUN, B.N.

Synthesis of ammonia in a fluidized catalyst bed. Zhur.  
prikl. khim. 37 no.2:233-239 F '64. (MIRA 17:9)

1. Leningradskiy tekhnologicheskij institut imeni Lenosoveta i  
Novomoskovskiy khimicheskij kombinat.

MUKHLENOV, I.P.; AVERBUKH, A.Ya.; VITVITSKIY, A.I.

Effect of catalyst mixing on the process of conversion of  
methanol to formaldehyde in a fluid bed. Zhur. prikl. khim.  
37 no. 4:705-710 Ap '64. (MIRA 17:5)

1. Leningradskiy tekhnologicheskii institut imeni Lensovet.

YESELEV, I.M.; MUKHLENOV, I.P.; TRABER, D.G.

Use of an iron catalyst in the contact-tower process. Zhur.  
prikl. khim. 37 no. 4:722-727 Ap '64. (MIRA 17:5)

1. Leningradskiy tekhnologicheskij institut imeni Lensoвета.

MUKHLENOV, I.P.; TABOLKIN, A.F.; TUMARKINA, Ye.S.

Desorption of chlorine from a saturated solution of sodium  
chloride. Zhur.prikl. khim. 37 no. 5:960-964 My '64.  
(MIRA 17:7)

1. Leningradskiy tekhnologicheskii institut imeni Lensoveta.



VITVITSKIY, A.I.; MUKHLENOV, I.P.; AVERBUKH, A.Ya.

Effect of temperature, space velocity, and properties of the catalyst on the conversion of methanol to formaldehyde in a fluidized bed. Zhur.prikl. khim. 37 no. 5:984-988 My '64.  
(MIRA 17:7)

1. Leningradskiy tekhnologicheskii institut imeni Lensoveta.

YESSELEV, I.M.; MUKHOMENOV, I.P.; TRABER, R.G.

Certain problems involved in the operating conditions of a combined  
contact-tower process. Zhur. prikl. khim. 37 no.6:1204-1210 Ja '64.  
(MIPA 12:3)

1. Leningradskiy tekhnologicheskii institut imeni Lanskoveta.

GORSHTEYN, A.Ye.; MUKHLENOV, I.P.

Critical velocity of gas corresponding to the beginning of  
spray drying. Zhur. prikl. khim. 37 no.9: 887 1893 S '64.

(MIRA 17:10)

1. Leningradskiy tekhnologicheskii institut imeni Lensoвета.

RUMYANTSEV, O.V.; SOKOLINSKIY, S.A.; MUKHLENOV, I.P.; POMERANTSEV,  
V.V.

Optimum design of reactors with internal heating for the  
synthesis of ammonia and methanol. Khim. prom. 40 no. 4,  
605-610 Ag '64. (MIRA 18:4)

1. Moskovskiy institut khimicheskogo mashinostroyeniya (for  
Rumyantsev, Sokolinskiy). 2. Leningradskiy ordena Trudovogo  
Krasnogo Znameni tekhnologicheskii Institut im. Lensoвета (for  
Mukhlencov, Pomerantsev).

DOBKINA, Ye.I.; DERYUZHKINA, V.I.; MIKHLENOV, I.P.

Effect of thermal treatment on the porous structure of catalysts.  
Kin. i kat. 6 no.2:352-355 Mr-Ap '65. (MIRA 18:7)

1. Leningradskiy tekhnologicheskii institut imeni Lensoвета.

SOROKO, V.Ye.; MUKHLENOV, I.P.; MIKHAILEV, M.F.

Calculating the minimum hydraulic resistance of gas distribution  
grids of apparatus with a fluidized bed. Izv.vys.ucheb.zav.;  
khim.i khim.tekh. 8 no.4:658-673 '65. (MIRA 18:11)

Leningradskiy tekhnologicheskii institut imeni Leningra,   
kafedra obshchey khimicheskoy tekhnologii.

MUKHLENOV, I.P.; GORSHTYIN, A.Ye.

Studying a spouting layer. Khim.prom. 41 no.6:443-446 1965.  
(MIRA 19:8)

1. Leningradskiy tekhnologicheskiy Institut imeni Lanskoyta.

MUKHLENOV, I.P.; DOBKINA, Ye.I.; TRABER, D.G.; DERYUZHKINA, V.I.;  
FILIPPOVA, Z.G.

Effect of the concentrations of impregnating solutions on the  
chemical composition and structure of a mechanically strong  
contact vanadium mass. Khim. prom. 41 no.10:751-754 O '65.  
(MIRA 18:11)



VITVITSKIY, A.I.; MUKHLENOV, I.P.; AVERBUKH, A.Ya.

Mechanism of the conversion of methanol through hydrogen peroxide as an intermediate product. Zhur. org. khim. 1 no.4:799-802 Ap. '65. (MIRA 18:11)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta.

MUKHLENOV, I.P.; IVANOVA, R.S.

Poisoning of a vanadium catalyst for the oxidation of sulfurous  
anhydride in fluidized bed. Zhur. prikl. khim. 38 no. 10:  
2328-2330 0 '65. (MIRA 18:12)

L. Leningradskiy tekhnologicheskii institut imeni Lensoveta.  
Submitted Sept. 13, 1963.

ACC NR: AR6019262

AUTHOR: Mukhlenov, I. P.; Gorshteyn, A. Ye.

TITLE: Hydrodynamics of reactors with a fountaining layer of a granular material

SOURCE: Ref. zh. Mekhan, Akad. Nauk SSSR

REF SOURCE: Sb. Vses. konferentsiya po khim. reaktoram. T. 3., Novosibirsk, Sib. otd. AN SSSR, 1965, 553-562

TOPIC TAGS: gas dynamics, hydrodynamics

TRANSLATION: A basic advantage of a fountaining layer is the absence of a gas-distribution grating. In this report results are given of research by the authors in the hydraulics and structure of a fountaining layer, and their generalizations and empirical correlations are presented. Such correlations are given for the determination of the value of peak pressure, the pressure loss when fountaining develops, the velocity of initial fountaining, the porosity in the fountaining nucleus, and the particle velocity in it. O. M. Todes.

SUB CODE: 20

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SOV/3-59-5-18/34

22(1)

AUTHOR: Vol'fkovich, S.I., Academician; Mukhlenov, P.P.,  
Professor; Averbukh, A.Ya., Docent.

TITLE: Courses in General Chemical Technology

PERIODICAL: Vestnik vysshey shkoly, 1959, Nr 5, pp 60 - 65  
(USSR)

ABSTRACT: In connection with the 7-year Plan the author stresses the necessity of training chemist-technologists and chemist-researchers with a broad scientific-technical outlook and profound understanding of chemical engineering. To this end instruction in chemical technology must be properly organized at technological institutes and universities. Contemporary chemical technology makes a broad use of the basic laws, regulations and methods of chemistry, physics, physical chemistry, as well as of mechanics, thermotechnics, electrical engineering and several other theoretical and economic subjects. Being the generalizing and basic course,

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